

TWO NEW SPECIES OF *ALOE* (LILIACEAE) FROM ZAMBIA

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ABSTRACT

Two new species of *Aloe* from Zambia are described, their apparent relationships discussed and their positions in the "Key to the species" in Reynolds, *The Aloes of Tropical Africa and Madagascar* (1966), are indicated.

UITTREKSEL

TWEE NUWE SOORTE *ALOE* (LILIACEAE) VANAF ZAMBIA

Twée nuwe soorte *Aloe* vanaf Zambia word beskryf, hulle blykbare verwantskap bespreek en hul plek in die „Sleutel tot die soorte" in Reynolds, *The Aloes of Tropical Africa and Madagascar* (1966) word aangedui.

Aloe luapulana Leach, sp. nov.; ad *A. christianii* Reyn. affinis sed planta parviore semper acaulescentes, rosula foliorum parviorum; tardius florenti. inflorescentia brevior infra medium ramosa, racemis brevioribus laxius floribusque brevioribus basaliter inflatis differt.

Plantae acaulescentes, solitariae. *Folia* c. 16, rosulata patentia, ovato-attenuata, c. 30 cm longa (ubi ambrosa ad 55 cm), basi 6—7,5 cm lata, plerumque parte apicali siccata marcidaque (usque ad $\frac{2}{3}$ per totam longitudinem), succo sicco flavido; *supra* pallide viridia, obscure striata, apicem et marginem versus purpureo-brunnescentia, basi leviter concava; *subtus* pallide griseo-viridia, distinctius striata; *marginēs* cartilaginei, exalbidi, dentibus deltatis pungentibus 1—3,5 (5) mm longis, parvis confertis basin versus, grandioribus, 15—18 (25) mm distantibus apicem versus. *Inflorescentia* paniculata, infra medium ramosa, c. 110 cm alta. *Pedunculus* brunneus, plus minusve teres vel perleviter compressus prope basin, c. 1,0 cm diam. *Racemi* erecti, laxe floriferi, cylindraceo-acuminati, 16—26 cm longi, c. 6 cm diam., coma parva sicca ornati, gemmis patulis floribusque apertis cernuis. *Bractaeae* ovatae, acutae, scariosae exalbidae, 4—5 mm longae, c. 3,5 mm latae, nervis brunneis 4—5. *Pedicelli* patuli, c. 7,5 mm longi. *Perianthium* coralloides ad orem flavescens, haud stipitatum, 29—33 mm longum, ad basim truncatum inflatum 8—9 mm diam. inde ad 5 mm decrescens, cylindraceo-trigonum, leviter lateraliter compressum; *segmenta exteriora* per 12—16 mm libera, obscure triplinervia; *interiora* latiora, leviter carinata, apice obtusiora patentiora, minutissime denticulata. *Antherae* ad 6 mm exsertae. *Ovarium* viride, obtusissime trigonum, 6—7 mm longum, c. 2,5 mm diam. *Stylus* demum ad 3,5 mm exsertus.

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Type Material: Zambia, Luapula Distr., Mansa (Fort Rosebery) P.A.G. Weeks 1 sub Leach 14754 (PRE; SRGH, holo.).

Specimens Examined:

ZAMBIA (N): Luapula Distr., Luongo Riv., on rocks above Masonda Falls, $\pm$ 1230 m alt., $\pm$ 56 km N of Mansa, cult. Lusaka, fl. Sept. 1969, G. Williamson 1738 (SRGH); Mansa, termite mound near aerodrome, $\pm$ 1240 m alt., cult. Salisbury, fl. Sept. 1970, P.A.G. Weeks 1 (BR; SRGH, in liquid), idem, fl. Aug. 1971, sub Leach 14754 (PRE; SRGH), plant in tree shade. 14754B (K; PRE; SRGH), 14754C (K; MO).

This new species from the *Flora Zambesiaca* area appears to be most closely related to the widely distributed *A. christianii*, and in rosettes of pale green obscurely striate leaves the resemblance is very close indeed, although plants of the new species are much smaller than the average for *A. christianii*. The difference in size becomes even more evident when plants flower, as the inflorescence of *A. luapulana* averages only about 1 m in height, in contrast to the 2—2,75 m of that of *A. christianii*, and is branched at, or mostly, well below the middle, while that of its relative branches well above that level. However, the most important difference lies in the shorter more laxly flowered racemes of the new species and in its shorter flowers which are noticeably inflated at the base. All other species in this apparently closely related group have flowers which are either more or less straight or somewhat tapered from the base; included here, in addition to *A. christianii*, are *A. pretoriensis* Pole Evans, *A. guerrae* Reyn. and although slightly less close in some respects *A. crassipes* Bak., *A. trigonantha* Leach and probably *A. steudneri* Schweinf. Finally the new species flowers in late August/September as compared with the usual May/June flowering period for *A. christianii*.

A. luapulana is known only from the type locality near Mansa (Fort Rosebery) where plants collected by Mr. P. A. G. Weeks appeared to be restricted to a termite mound near the aerodrome, and from Masonda Falls on the Luongo River, a tributary of the Luapula River, here plants found by Dr. G. Williamson were growing on rocks above the falls, in a very humid situation in association with *Aloe mzimbana* Christian, a shrubby euphorbia and several orchids. This latter locality lies about 150 km south of Lake Mweru and some 8 km only from the Congo border to the west of Lake Bangweulu; it seems probable therefore, that the distribution of the new species will be found to extend into that territory also.

Plants acaulescent, solitary. *Leaves* about 16, rosulate, spreading, ovate attenuate, $\pm$ 30 cm long (in shade up to 55 cm), 6—7,5 cm wide low down, usually with the apical two thirds or more, dry and twisted, the sap dries yellow; *upper surface* pale green, obscurely striate, tinged purplish brown towards the apex and margins, slightly concave low down; *lower surface* greyish green, more clearly striate, tinged purplish towards the apex and margins; *margins*

narrowly cartilaginous, whitish, armed with $\pm$ deltate pungent teeth, 1—3.5 (5 in shade) mm long, whitish at the base brownish orange at the apex, smaller and more crowded below, 2—5 mm apart, with the interspaces usually somewhat rounded, becoming larger and more widely spaced above, 15—18 mm (25 in shade) apart with the interspaces usually $\pm$ straight. *Inflorescence* a branched panicle, 110 cm high (105–120), branched below the middle with 6 simple, spreading arcuate-ascending branches, each subtended at its base by a whitish, scarious bract with many dark brown nerves and with a few sterile bracts below the raceme. *Peduncle* terete, not or only slightly compressed low down, then about 1.0 cm diam., brown with a slight bloom and numerous minute whitish flecks. *Racemes* erect, laxly flowered, cylindric acuminate, 16—26 cm long, the terminal longest, with a small dry coma at the apex, with the buds greyish pink, grey at the apex, spreading, becoming almost immediately $\pm$ horizontally so, with the pedicels spreading and the open flowers cernuous to pendulous. *Bracts* ovate acute, scarious, whitish, with 4–5 dark to red-brown confluent nerves, 4—5 mm long, $\pm$ 3.5 mm wide. *Pedicels* the colour of the perianth, $\pm$ 7.5 mm long. *Perianth* coral-red with a slight bloom, becoming yellowish at the open mouth, cylindric trigonous, slightly laterally compressed, not at all stipitate, truncate or slightly depressed at the inflated base, 29—33 mm long, averaging 30 mm, 8—9 mm diam. across the ovary, thence tapering (not sharply constricted as in *Saponariae*) to $\pm$ 5 mm diam. (slightly wider in side view); *outer segments* free 12—16 mm with 3 obscure brownish nerves confluent at the paler coloured spreading apices; *inner segments* themselves free but dorsally adnate to the outer, red with broad whitish margins, orange to orange-brown inside at the more obtuse more spreading apices, with a slightly raised keel with 3 reddish nerves more or less confluent at the very minutely denticulate apex. *Filaments* filiform flattened, faintly pinkish at the base becoming yellow towards the apex, the 3 inner narrower and lengthening before the three outer; anthers dark tangerine, exerted $\pm$ 6 mm. *Ovary* bright green, 6-grooved, very obtusely trigonous, 6—7 mm long, $\pm$ 2.5 mm diam., tapering slightly towards the apex; *style* straw coloured at the base becoming paler above, at length exerted $\pm$ 3.5 mm; *stigma* white.

A. luapulana would 'Key out' in Reynolds, *Aloes of Tropical Africa and Madagascar*: 183 (1966), under Group 12, but is distinguished by its shorter, basally inflated flowers and additionally from *A. trigonantha* Leach by its shorter pedicels and unspotted leaves.

***Aloe enotata* Leach, sp. nov.**

?*Aloe veseysi* Reyn., Reynolds, *Aloes Trop. Afr. Madag.*: 168 (1966), pro parte quoad loc. Kambole Escarpment.



Flowering Hort. Weeks. Ht. 1,1 m.



Lateral raceme.



Flowers 1 : 1

FIG. 1.

Aloe luapulana Leach.

A. veseyi Reyn. affinis sed planta robustiore, foliis enotatis; bracteis parvioribus; floribus rubris trigono-indentatis basi inflatis, stigmatibus inclusis antherisque non vel vix exsertis bene distincta; racemis floribusque ad *A. chabaudii* Schönl. accedens sed habitu et foliis falcatis statim dignoscenda.

Planta scopulis dependens; caule simplici, usque ad 60 cm longo, 3 cm diam., interdum surculis e basi exilientibus; foliis c. 12, rosulatis. *Folia* 45–60 cm longa, basi 5–6 cm lata, valde patula deorsum versus valde falcata; *supra* plana vel leviter concava, pallidula viridia, subrosea suffusa, praesertim versus apicem et margines, haud notata; *subtus* convexa quam supra paucillimum dilutiora; *margines* angustissimi, cartilaginei, acuti, exalbidi, dentibus parvis dissitis plerumque prorsum uncinatis, interstitiis 20–40 mm longis, plus minusve rectis. *Inflorescentia* pendula, laxa paniculata, c. 85 cm longa, infra medium ramosa, inter ramos leviter flexuosa; *pedunculo* 32 cm longo, brunneo, descendenti gracili tereti, basi leviter compresso, c. 1 cm lato angulis acutis; inflorescentiae ramis 6, bracteis amplexantibus binis, inaequalibus, exalbidis basi indutis; racemis plus minusve horizontaliter patulis leviter ascendentibus vel arcuato-ascendentibus. *Racemi* aliquantum laxe floriferi, cylindraceo-acuminati, 14–20 cm longi, c. 7,5 cm diam., gemmis patulis floribusque apertis leviter cernuis. *Bracteae* plus minusve ovatae acutae, c. 4 mm longae, 3 mm latae, scariosae exalbidae, nervis 3 atrobrunneis. *Pedicelli* patuli brunnei, usque ad 17 mm longi. *Perianthium* rubiginosum, 25–28 mm longum, basi plus minusve obtuse obconicum, circum ovarium ad 8 mm diam. inflatum, supra ovarium sigillatim trigono-indentatum, inde ad c. 5,5 mm diam. angustatum, infra orem apertum ad 6,5 mm diam. gradatim dilatatum; *segmenta exteriora* per 6–8 mm libera, nervis 3 rubris, fere vel satis ad apicem confluentibus; *interiora* latiora, breviter leviter carinata, nervis 3, obscuris confluentibus, marginibus latissimis albidis, aliquantum aurantiacis versus apicem brunneum. *Filamenta* citrina; *antheris* testaceis non vel vix exsertis. *Ovarium* olivaceum basi subtruncatum c. 2,5 mm diam., 5 mm longum, apice obtusum c. 1 mm diam. *Stylus* citrinus; *stigma* exalbida inclusa. *Semina* plus minusve trigona, membranosa alba exalbidis tenuis angustis instructa, c. 5 mm longa, 2,25 mm lata.

Type Material: Zambia, Abercorn Distr., Kambole escarpment, *Richards* sub *Leach* 14796 (K; SRGH, holo.).

Specimens Examined:

ZAMBIA (N): Abercorn Distr., Kambole escarpment, $\pm$ 40 km W of Mpulungu, cult. SRGH 5693, fr. Aug. 1970, fl. 10.vii.1971, *Mrs. H. M. Richards*, s.n. sub *Leach* 14796 (K; SRGH), idem cult. Umtali, fl. July 1969, sub *Cannell* 62 (PRE).

The new species appears to have been collected only by that most indefatigable of collectors: Mrs. Mary Richards, whose gatherings from this part

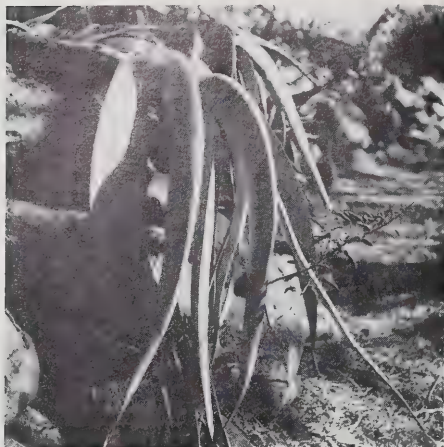


FIG. 2.

Aloe enotata Leach. Plant flowering at Umtali. Cannell 62. Photos: Mr. I. C. Cannell.



although very similar, do differ slightly; those of *A. veseyi* being somewhat more brownish in colour and more densely marked and speckled (more definite comparisons are here also, hampered by shortage of material). The seeds of both species are very similar to those of *A. chabaudii* but quite different from those of *A. mendesii* Reyn., a similarly pendent species from S. Angola with similar falcate leaves.

Not a great deal is as yet known about fruit and seed characters of the genus, but it does seem possible that the characters involved may well prove to be of some significance in the classification of *Aloe*, and for that reason are mentioned here.

In trigonously indented perianth and shape of racemes *A. enotata* appears to have a somewhat more distant connection with the group containing the widespread and extremely variable *A. chabaudii*; in fact its inflorescence appears to be almost directly comparable with that of plants of the latter species which are to be seen hanging on cliffs at Victoria Falls on the Zambesi River. However, in most other respects these taxa are quite different. It should also be mentioned that there is a tendency for similarly but less markedly indented perianths to occur in *A. veseyi*, thereby, it seems, confirming its close relationship with *A. enotata*.

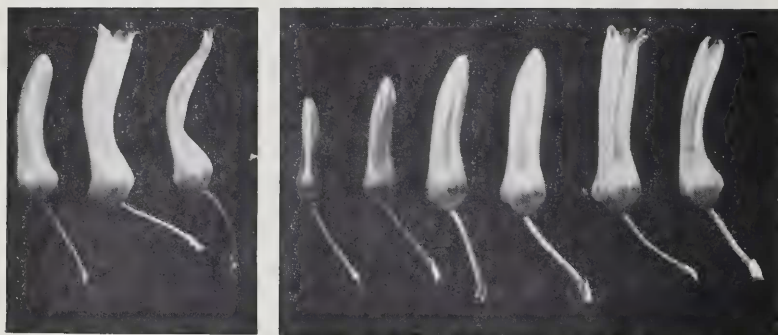


FIG. 4.

Flowers 1 : 1, left: *A. chabaudii*, right: *A. enotata*. Photo: L. C. Leach.

Plants hanging from cliffs, with a simple stem up to 60 cm long, 3 cm diam., sometimes forming clumps from offsets from the base, with a rosette of ± 12 leaves. Leaves 45—60 cm long, 5—6 cm wide towards the base, widely spreading but all becoming strongly falcate and pointing downwards; upper surface flat or slightly concave, pale green suffused with pink, especially towards the margins and apex, neither striate nor maculate; lower surface convex, somewhat paler in colour than the upper; margins very narrowly cartilaginous, sharp

edged, whitish, with small, widely spaced, usually forwardly hooked, pungent teeth, with the interspaces 20–40 mm long (usually $\pm$ 30 mm), mostly straight or $\pm$ following the curve of the falcate leaves. *Inflorescence* a pendulous lax panicle, $\pm$ 85 cm long, branched below the middle, somewhat flexuose between the branches; *penduncle* 32 cm long, purplish brown, almost devoid of bloom, slender, terete, slightly compressed towards the base with sharp lateral angles; the 6 brown, whitish speckled branches of the inflorescence clasped at their base by a pair of unequal whitish bracts; with the racemes horizontally spreading, slightly ascending, or those arising on the lower side of the axis, usually arcuate-ascending. *Racemes* rather laxly flowered, cylindric-acuminate, 14–20 cm long, $\pm$ 7.5 cm diam., with the buds spreading and the open flowers somewhat cernuous. *Bracts* $\pm$ ovate acute, $\pm$ 4 mm long, 3 mm wide, scarious, whitish with 3 blackish brown nerves. *Pedicels* spreading, sometimes apically cernuous, brown and whitish speckled, up to 17 mm long. *Perianth* rather dull red, obscurely purplish striped, with a faint bloom, 25–28 mm long, more or less obtusely obconic at the base, inflated to 8 mm diam. around the ovary, then markedly trigonously indented from there narrowed to about 5.5 mm diam., gradually widening again to $\pm$ 6.5 mm diam. a little below the open mouth; *outer segments* free for 6–8 mm, with 3 red nerves, confluent or almost so towards the apex; *inner segments* wider, shortly lightly keeled, themselves free but dorsally adnate to the outer, with 3 obscure apically confluent nerves, with wide whitish margins becoming orange in their upper third towards the orange-brown apex. *Filaments* lemon-yellow; with the terracotta anthers not or scarcely exerted. *Ovary* 6-grooved, dull yellowish green, faintly orange in the grooves, soon becoming olive-brown, subtruncate at the 2.5 mm diam. base which is broadly fused to the thick fleshy base of the perianth, $\pm$ 5 mm long, tapering to the relatively small ($\pm$ 1 mm diam.) obtusely truncate apex. *Style* lemon; *stigma* whitish, granulate, included. *Seeds* more or less trigonous, brownish black with a few slightly raised paler spots, and thin, narrow, sparingly blackish flecked, whitish wings.

A. enotata would fit into the key in Reynolds, *The Aloes of Tropical Africa and Madagascar* (1966): 162, under Group 10 "Plants pendent, or semi-pendent" "B.—Leaves densely rosulate (not spaced at apex of stems)", but may be "Keyed out" from those included here, as well as from *A. inamara* Leach, by its basally inflated, trigonously indented, red flowers &/or leaves neither spotted nor striate.

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